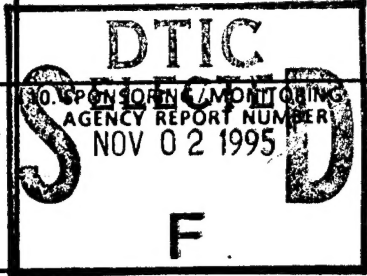


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WHAT IS RELATIVE ABOUT COMBAT POWER?

A Monograph
By
Major Brian D. Barham
Infantry



School of Advanced Military Studies
United States Army Command and General Staff College
Fort Leavenworth, Kansas

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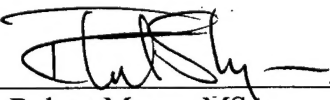
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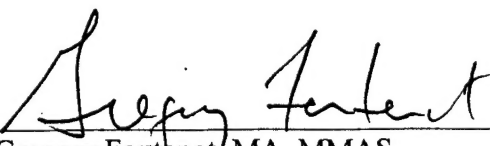
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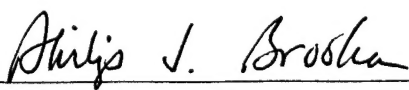
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Approved by:

 Monograph Director
LTC Robert Mayes, MS

 Director, School of
COL Gregory Fontenot, MA; MMAS Advanced Military
Studies

 Director, Graduate
Philip J. Brookes, Ph.D. Program

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I. INTRODUCTION

Imagine a planner that has limited time to produce a course of action. The fate of his entire unit depends on how incisive he is. Battles have raged for days. Now, perhaps the decisive engagement is at hand. The planner knows the merits of using the troop leading procedures and the decision making process. What has frustrated him in past efforts is his inability to anticipate the significant factors that impacted on the battle as it unfolded. He is not alone. His G-3, his general, and the subordinate commanders share his frustration. Some of his peers have lamented aloud that, though they crunch the numbers for force-ratio computations time after time, their efforts never seem to reveal any enlightened manner in which to defeat the enemy. The G-2 knows that his information on the enemy is as accurate as is possible under the chaotic circumstances. But, this enemy is different than any other. The enemy's organization, equipment, and methods do not fit any past template. The G-3 wishes that they could collate all the data and send it off to a magical computer that would reveal the best way to pursue their difficult task. No one thinks it is impossible to win. However, not one seems to have an enlightened view about how to undertake the task at hand.

Does this seem far fetched? Consider the frustration that division and corps commanders and staffs exhibit during a Battle Command Training Program (BCTP). At the tactical level, think how many battalion and brigade commanders and staffs have found themselves in this position at the combat training centers (CTCs). Sometimes units fail because of poor execution. This can be fixed by training to achieve a designated standard. However, sometimes units fail because they try very hard to execute an inferior plan. At the National Training Center (NTC) and BCTP we trudge our way through after action reviews (AARs) and try to do better next time. When the cost of planners' mistakes are real, soldiers may find themselves becoming heroes and dying in vain.

Background: Our doctrine has planners follow the military decision-making process found in FM 101-5 and many other manuals. This process is a very practical method. When followed, it gives planners the best chance of making proper tactical and operational decisions. However, there is an aspect of planning in the decision making process that requires further illumination. The military decision-making process requires planners to consider relative combat power. This monograph will answer the question: "What is the single model that can best highlight aspects of combat power relative to an enemy at the operational and tactical level?" The common force-ratio techniques that are presented in doctrinal manuals are limited. The force-ratio method does have merit, but it does not adequately consider all the aspects of relative combat power. While force-ratios may allow a planner to determine if he has sufficient combat power to attack or defend, this technique gives no insight into a method of pursuing course of action development. The author will present a technique that allows planners to discover significant factors that pertain to the situation. These significant factors give insight into a method of pursuing courses of action that are suitable, feasible, and acceptable.

This introduction will recall how some past military philosophers viewed the phenomenon of combat power. Ideas as to what is important concerning combat power seem to have much in common among prominent military thinkers. The introduction will also describe the need to have a quick and easy technique to analyze relative combat power that gives insights into developing solid courses of action.

Methodology: The monograph will consult the Army's current doctrinal manuals to highlight the Army's position on relative combat power. The monograph will also review the definitions of the elements of combat power. The doctrinal definition of combat power then becomes the criterion by which to measure the usefulness of techniques that analyze relative combat power. Then the monograph will relate how there are certain shortcomings with the current doctrinal techniques to determine all the aspects of relative combat power.

Next, the monograph will illustrate the Army's techniques of using force-ratios to determine relative combat power. While this can provide some useful information, the technique does not account for all the aspects of combat power. To truly appreciate the elements of combat power, one must account for their possible effects. The planner must determine the effects that the enemy can have on his force and the effects his force's combat power can have on the enemy. Along with discussing the effects of combat power, the monograph will consider the impact of the information age.

Having established the elements of relative combat power as the criteria to measure the effectiveness of a relative combat power technique, the monograph presents the relative combat power matrix. This is the crux of the monograph. The matrix uses the elements of combat power and their possible effects as the methodology to determine their relative impact upon friendly and enemy forces. The author maintains that by using the relative combat power matrix, planners are able to ascertain significant factors that will impact upon the forthcoming battle. Once aware of these significant factors, the planner can create viable courses of action. The planner can use the significant factors as criteria to determine the merits of different courses of action. The monograph includes a short hypothetical scenario as a vignette to walk planners through the relative combat power matrix functions as a method to capture the information required to produce courses of action. Finally, the monograph will conclude with a brief summary. The author will draw conclusions on the merits and shortcomings of the relative combat power matrix.

The Philosophers: Time honored truths concerning relative combat power are heralded by numerous military philosophers. Since our current doctrine draws some of its text from concepts of Clausewitz and Jomini (see FM 100-5, "Concepts of Theater and Operational Design" p 6-7), it seems prudent to consult their writings concerning combat power. To begin with, Clausewitz obviously believed that a planner was responsible for determining where to obtain relative superiority when creating his plan.

This meant making decisions about where and how to bring about decisive action, and determining where to take risks.

"Relative superiority, that is skillful concentration of superior strength at the decisive point, is much more frequently based on the correct appraisal of the decisive point, on suitable planning from the start; which leads to appropriate disposition of the forces, and on the resolution needed to sacrifice nonessentials for the sake of essentials..."¹

Certainly an overall analysis of combat power is of some use. It is critical to determine relative combat power of both sides at the decisive point, where the major combat action should take place. A planner must be able to determine what is decisive and then determine how to be successful. This enables him to properly array forces ahead of time. In some areas the friendly forces may be conducting economy of force missions. In others, the friendly units concentrate the effects of combat power to achieve decisive results. An analysis of combat power must inform the planner how much combat power is required for his supporting efforts--as well as his main effort. The analysis of terrain and careful consideration of possible decisive points should tell him where the battle should take place.

Jomini also emphasized the importance of concentration of combat power at the decisive point. When discussing his fundamental principle of war, Jomini offers several maxims.

"...[T]hrow by strategic movements the mass of an army, successively, upon the decisive points of a theater of war, and also upon the communications of the enemy as much as possible without compromising one's own...On the battlefield to throw the mass of the force upon the decisive point, or upon that portion of the hostile line which it is of the first importance to overthrow...To so arrange that these masses shall not only be thrown upon the decisive point, but that they shall engage at the proper times with ample energy...[W]hile it is easy to recommend throwing the mass of the forces upon the decisive points, the difficulty lies in recognizing those points."²

Two of the most prominent military thinkers of all time both state that planners should determine what is decisive. This enables the planner to arrange his forces on the ground while accounting for time and space factors. At the critical time in the battle, a prudent planner would have been sure to mass his forces at the decisive place. In days of old, it was necessary to mass men and equipment to achieve the desired effects. Today, commanders can mass the effects of combat power while remaining dispersed. The desired effect, however, remains the same--generate overwhelming combat power to defeat the enemy. Neither of these philosophers recommended counting up the numbers of bayonets, cannons, horses, or any other such item, and then comparing friendly and enemy strengths. In short, they did not recommend a force-ratio method. They both stated that planners must determine what is decisive, where to be successful, and then produce overwhelming combat power at the decisive point.

Concentrating combat power at a decisive point is not a new idea. It was not even new during Jomini's and Clausewitz's day. The ancient Chinese military theorist Sun Tzu offers this thought on concentrating combat power.

"If I am able to determine the enemy's disposition while at the same time I conceal my own then I can concentrate and he must divide. And if I concentrate while he divides, I can use my entire strength to attack a fraction of his. There, I will be numerically superior. Then, if I am able to use many to strike few at the selected point, those I deal with will be in dire straits." ³

All three theorists point out that the planner must be able to determine the "selected point" prior to the battle. The planner must arrange the troops for battle in a fashion that allows his side to seize the initiative in spite of overall force ratios. When a planner analyzes relative combat power there must be factors that offer insight as how to emerge victorious. This monograph offers the relative combat power matrix as a method to determine what is significant. Once the significant factors are identified, the planner is on his way to developing viable courses of action.

II. RELATIVE COMBAT POWER IN DOCTRINE

To discuss the merits of relative combat power, one must begin with an understanding of what elements comprise combat power. This understanding must include why combat power is important. Once this is accomplished, a planner may begin to determine how to use it.

"Combat power is created by combining the elements of maneuver, firepower, protection, and leadership. Overwhelming combat power is the ability to focus to ensure success and deny the enemy any chance of escape or effective retaliation...Overwhelming combat power is achieved when all combat elements are violently brought to bear quickly, giving the enemy no opportunity to respond with coordinated or effective opposition." ⁴

Two aspects become apparent after reviewing this definition. First, combat power has four elements. Therefore, any relative combat power analysis should consider maneuver, firepower, protection and leadership. Second, overwhelming combat power should be brought to bear to ensure success. To accomplish this, a planner must focus the combat power in a certain place at a certain time. It sounds simple, but as Clausewitz says, "that does not mean that everything is easy." ⁵

What is combat power and how should it be applied? FM 100-5 relates that these elements of combat power are actually dynamics.⁶ A dynamic has force. These dynamics of combat power shift or change in relation to each other. Each dynamic may be magnified or reduced, growing or inert, vital or inept. The dynamics of combat power are always relative to the situation, the terrain, friendly troops available, the enemy, the amount of time available, and the mission.

"Four primary elements--maneuver, firepower, protection, and leadership--combine to create combat power--the ability to fight. Their

effective application and sustainment, in concert with one another, will decide the outcome of campaigns, major operations, battles, and engagements. Leaders integrate maneuver, firepower and protection capabilities in a variety of combinations appropriate to the situation." ⁷

A close look at these "dynamic" elements of combat power reveals their relationship. Maneuver is about positional advantage, but relies upon firepower and protection to be successful. Firepower is the destructive force, but is most effective when combined with maneuver. Protection conserves the fighting potential of the force, but at some point protection considerations give way to maneuver and firepower. Leadership is the most dynamic element of combat power. Leadership infuses soldiers with the will to win. If applied properly, leadership combines with maneuver, firepower, and protection to provide victories for America's Army. The first element is maneuver.

"Maneuver is the movement of combat forces to gain positional advantage, usually in order to deliver--or threaten delivery of--direct and indirect fires. Maneuver is the means of positioning forces at decisive points to achieve surprise, psychological shock, physical momentum, massed effects, and moral dominance. Successful maneuver requires anticipation and mental agility.

"Commanders may achieve the effects of maneuver without movement by allowing the enemy to move into a disadvantageous position. Moving and positioning units during deployments to a theater and within a theater...can influence the outcomes of battles and campaigns. Maneuver continually poses new problems for the enemy..." ⁸

When pressed, maneuver by itself is not enough. The units that endeavor to maneuver must have firepower to back up their relative position of advantage or maneuver is a moot point. Maneuver and firepower must work in tandem.

"Firepower provides destructive force; it is essential in defeating the enemy's ability and will to fight. It is the amount of fire that may be delivered by a position, unit, or weapon system. Firepower may be either

direct or indirect...Firepower can be integrated with smoke or electronic warfare systems to disrupt or disorganize the enemy, producing specific physical and psychological effects.

"Firepower effects occur at the strategic, operational, and tactical levels and must be synchronized with other attack systems against the enemy...[F]irepower is most effective when combined with the maneuver force." ⁹

Units will maneuver freely and apply firepower with skill and determination if the soldiers know that they are maneuvering and firing from a relatively protected position or weapon system. Part of protecting a unit is maneuvering it into a position of advantage and placing effective firepower on the enemy so the enemy can not effectively attack or defend.

"Protection conserves the fighting potential of a force so that commanders can apply it at the decisive time and place. Protection has four components.

- * The first component of protection is OPSEC and deception operations, which help keep the enemy from locating friendly units. Skillful reconnaissance and counterreconnaissance [enhance] protection...
- * The second component of protection keeps soldiers healthy and maintains their fighting morale. It includes guarding their equipment and supplies from loss or damage.
- * The third component of protection, safety, is part of all combat operations and operations other than war.
- * The fourth component of protection is the avoidance of fratricide-the unintentional killing or wounding of friendly personnel by fire." ¹⁰

Leadership is that aspect of combat power that provides purpose, direction, and motivation. ¹¹ Leaders need to be able to build teamwork, yet have the courage of their convictions to stand alone. Leaders must possess a measure of physical courage, and sometimes more importantly, moral courage. Leaders are required to understand the effects of battle and how to win battles. During combat, leaders employ the other elements of combat power to win.

"The most essential dynamic of combat power is competent and confident officer and noncommissioned officer leadership. Leaders inspire soldiers with the will to win. They provide purpose, direction, and motivation in combat. Leaders determine how maneuver, firepower, and protection are used, ensuring these elements are effectively employed against the enemy." ¹²

At some point, leaders make use of information. Professional discussions of combat power have some advocating that acquisition, processing and management of information merit creating a new element of combat power. The technical sophistication of information systems allow for the user to leverage a substantial advantage over his adversary. Protecting information is as important as acquiring information. Hence, some declare that *Information* should be included as an element of combat power. The author's position is that information is only as good as the people who use it. Leaders must understand how information efforts impact on the elements of combat power. While technology will continue to yield advances in the information field, the impact of the advances only have application as to how they affect maneuver, firepower, protection, and leadership.

The elements of combat power are maneuver, firepower, protection, and leadership. Each element has dynamic characteristics. Each element is interactive with the others. The contribution of one element may be enhanced or degraded depending upon how it is combined with the others. The elements are most effective when operating in concert with each other. Competent leaders integrate the aspects of maneuver, firepower, and protection and determine how to win. It seems reasonable to provide leaders with a simple analytical method that can aid them in consideration of all aspects of combat power. The method our doctrinal manuals use to analyze combat power is force-ratios. It is a very useful technique to gain appreciation of the relative strength of friendly and enemy forces.

III. BATTLE CALCULUS AND FORCE RATIOS

Force-ratios is a numerical technique that indicates the relationship of similarly measured indices of opposing military forces. The base unit of measure is one.¹³ Several aspects combine to determine force-ratio totals: strength, weapons weights, combat potential, and unit equivalents. "These computations give the staff a feel for relative strengths and weaknesses, not absolute mathematical answers as to what friendly or enemy forces will do." ¹⁴

Strength: The physical size of a unit is expressed as a percentage of the authorized TOE. Losses could be as a result of previous combat action, maintenance difficulties, illness, or even a portion of the unit that has not arrived in theater. The chart below indicates one method of totaling unit strength.

Figure 1: UNIT STRENGTH ¹⁵

<u>TOE</u>	<u>LOSSES</u>	<u>STRENGTH</u>	<u>PERCENTAGE</u>
Tanks 300	141	(159/300)	53
APC/IFV 250	51	(199/250)	80
Arty 200	11	(189/200)	95
AT 200	16	(184/200)	92
AD 300	117	(183/300)	61
Atk Helo 50	18	(32/50)	64
Personnel 10,000	1,308	(8692/10,000)	<u>87</u>
			5.32

5.32 divided by 7 = .76

TOTAL UNIT STRENGTH: 76%

Weapons Weights: A mathematical method for determining comparison values for weapons. A weight (numerical value) represents the best that a weapon can do for

firepower, target acquisition, maneuverability, and survivability. Weapons rates are derived using comparative values from a base weapon system. The M2 Bradley often functions as the base maneuver weapon and the M109A6 Paladin is now used as the base weapon for indirect fire.¹⁶

Combat Potential: The sum of weapons weights.

Unit Equivalents: A mathematical method for comparison values of units. Just as weapons are weighted against a base weapon, units are weighted against base units. The M2 Bradley battalion and the M109A6 Paladin battalion are usually the base units for maneuver and indirect fire units. Unit equivalents (UE) form the basis for developing force-ratios.¹⁷ In order to keep the illustration simple, attack helicopters, CAS, GS artillery, and other enhancers that could be assigned or OPCON to a commander for a portion or all of an operation are not included. The following is an example of unit equivalents.

Figure 2: UNIT EQUIVALENTS¹⁸

<u>US</u>		<u>ENEMY</u>	
MANEUVER		MANEUVER	
M2	1.00	BMP-1	.53
M113	.73	BMP-2	.58
INF	.48	BTR-70	.42
M1	1.07	(MRR) T-72S	.58
M1A1	1.19	(TR) T-80	.54
ARTILLERY		ARTILLERY	
M109A6	.75	2S1	.48
M119	.60	2S3	.59
MLRS Btry	1.12	BM 21	2.32
ATACM Btry	1.87	9A52	3.07

Note: Unit equivalents are expressed in terms of pure battalions, unless otherwise noted. For example, the MLRS listed under US Artillery is a battery. The actual unit equivalent for an MLRS battalion is 3.45. The enemy tank battalions reflect two different types of organizations. For this table, the tank battalion organic to a motorized rifle regiment has forty tanks. The tank battalion organic to a tank regiment has thirty-one tanks. Another organization not shown on the table could be an independent tank battalion with fifty-one tanks assigned. This accounts for the apparent anomaly between the T72 and T80 battalions indicated on the chart. A T-80 battalion in a motorized rifle regiment has a unit equivalent value of 0.69. A T-72S battalion in a tank regiment has a unit equivalent value of 0.45. One must have a solid grasp of enemy unit organization in order to construct accurate unit equivalent tables. Bottom line: unit equivalents are complicated and depend on individual unit organizations.

Force-Ratios: To figure force ratios, take the strength percentage of the units and multiply them by the unit equivalent (UE) value. Then total the sums for friendly and enemy forces. Divide the two totals to find the force-ratios. The following demonstrates the force-ratio procedure.

Figure 3: FORCE - RATIO

<u>UNIT</u>	<u>UE VALUE</u>		<u>STRENGTH</u>		<u>TOTAL</u>
Friendly Forces:					
(1) M2 Battalion	1.00	x	.76	=	.76
(1) M2 Battalion	1.00	x	1.00	=	1.00
(1) M1A1 Battalion	1.19	x	.90	=	1.07
			TOTAL		2.83
Enemy Forces:					
(2) BMP-2 Battalion	1.16	x	.50	=	.58
(2) BMP-2 Battalion	1.16	x	.85	=	.97
(2) BTR-70 Battalion	.84	x	1.00	=	.84
(2) T-72S Battalion	1.16	x	1.00	=	1.16
			TOTAL		3.55

MANEUVER: 3.55 divided by 2.83 equals 1.25

For maneuver the enemy has a 1.25 to 1.00 advantage.

1.25 : 1.00

[The same procedure is done for artillery to figure force ratios.]

Friendly Forces:

(1) M109A6 Battalion .75 x .93 = .70

Enemy Forces:

(2) 2S3 Battalions 1.18 x .90 = 1.06

ARTILLERY: 1.06 divided by .70 equals 1.51

For artillery the enemy has a 1.51 to 1.00 advantage.

1.51 : 1.00

OVERALL: Add the totals for friendly forces maneuver and artillery. Do the same for the enemy. Divide the two sums to determine the overall force-ratio.

Friendly Forces: 2.83 + .70 = 3.53 Enemy Units 3.55 + 1.06 = 4.61

4.61 divided by 3.53 equals 1.31

Overall the enemy enjoys a 1.31 to 1.00 advantage.

1.31 : 1.00

As the examples indicate, the force-ratios method can be a good technique to quantify combat power. It determines relative values of opposing units. Planners can then consult a historical mission ratio table to determine what missions are possible.

Figure 4: HISTORICAL MINIMUM PLANNING RATIOS ¹⁹

<u>FRIENDLY MISSION</u>	<u>FRIENDLY : ENEMY</u>	<u>POSITION/STATUS</u>
DELAY	1 : 5	NO PREPARED POSITION
DEFEND	1 : 3	PREPARED/FORTIFIED
DEFEND	1 : 2.5	HASTY
ATTACK	3 : 1	PREPARED/FORTIFIED

ATTACK	2.5 : 1	HASTY
COUNTERATTACK	1 : 1	FLANK

Enhancers: After the force-ratios are computed, the planner applies some additional attributes to enhance the combat power. Determining what are the available enhancers and how to use them requires a solid understanding of relative combat power. For example, focusing friendly electric warfare efforts on specific targets can enhance a course of action. Realizing that the enemy has a weakness in their river crossing doctrine that could be exploited may enhance countermobility efforts. With each course of action, planners should consider enhancers to ensure that every possible asset is employed. After the numbers have been "crunched" planners must still look for ways to gain an edge. There will be times when the numbers are not favorable for the friendly course of action. Yet, the plan must give the unit the best chance for success. Whether the force-ratios favor friendly courses of action or not, planners must consider what enhancers are available for friendly and enemy use that are not accounted for in the force-ratio process.

Limitations: After determining the force ratios and consulting the historical minimum planning ratios, a planner has enough reliable information to determine the opposing forces capabilities. The force-ratio method does a good job of incorporating maneuver and firepower factors into its equation. Depending upon the piece of equipment, some protection factors may be accounted for. However, there are elements within maneuver, firepower, and protection which are largely subjective. It is difficult to account for these aspects by assigning them a numerical value. Even the base weapon system and base unit equivalent requires a subjective determination of relative worth. How does one reliably quantify a type of unit? Is a battalion that has operated with M2 Bradleys for several years only as good as one that has had Bradleys for four months? Is a T72 unit operating as part of a Russian division only as good as one that is operating independently in Azerbaijan? These are subjective judgments. It is difficult to account for factors like these on a chart of basis unit equivalents.

"Numerical relative-force ratios do not include the human factors of warfare. Many times human factors may be more important than the number of tanks or tubes of artillery. Therefore, the staff must carefully consider and integrate them into their comparisons." ²⁰

Analyzing relative combat power is difficult. It attempts to make sense out of the various aspects that factor into relative combat power. Staffs attempt to reliably quantify data to present it in as objective a manner as possible. This explains the use of the force-ratio method. The danger is that staffs and commanders may rely too heavily on the force ratio method and fail to perform a genuine analysis.

"Field Manual 100-5 (1993) describes combat power as the effect created by combining the elements of maneuver, firepower, protection and leadership in combat against the enemy. By integrating and applying the effects of these elements with any other potential combat multipliers (CS and CSS arms as well as other service assets available) against the enemy, the commander can generate overwhelming combat power to achieve victory at minimal cost. This task is difficult at best. It requires an assessment of both tangible and intangible factors as well as considerations of an inordinate number of those factors either directly or indirectly affecting the potential outcome of the battle." ²¹

To properly account for combat power, one must account for its effects. The force-ratio method captures some of the effects of maneuver, firepower, and protection. But the number-crunching method prohibits itself from considering many of the effects of combat power. To determine the merits of any relative combat power technique, one must have an appreciation of the possible effects of combat power.

IV. THE ELEMENTS OF COMBAT POWER AND THEIR EFFECTS

BG(R) Wass de Czege wrote a paper in 1984 that discussed the effects of relative combat power. He believed the Army needed a new method for analysis of combat power. Too many leaders relied on an inexplicable "gut instinct" for how to prepare for battle. Many others put faith in simulated wargame results that could not replicate many of the battlefield variables.

"In some cases the analysis of combat power has become a cliché ridden exercise. In others there is a tendency to attribute more to the results of wargames and computer assisted simulations than they warrant simply because they are cloaked in an aura of scientific legitimacy. In practice US Army officers often tend either to rely on intuition and experience to place values on factors contributing to the combat power of opposing sides, or they engage in a deceptively simple counting exercise...

"The problem with the first method, the 'gut feeling of a senior commander' approach, is that a wide range of possible conclusions can flow from such loosely structured and unscientific analysis...

"The second method--the weapons/units counting method--involves an attempt to be more objective and scientific....The danger with this type of analysis is that it can lead to simplistic and fatalistic thinking based on judgments about only the quantifiable aspects of the battlefield." ²²

As a result of BG(R) Wass de Czege's efforts, a section in the most recent FM 101-5 contains a section on combat power effects. What follows is a chart depicting the effects of combat power and aspects that function to contribute toward the effects. The chart is a combination of BG(R) Wass de Czege's article, FM 101-5, and some input by the author. It is by no means a complete chart, but does provide a foundation for understanding the effects of combat power.

FIREPOWER

Volume of Fire.

Number of delivery means.

Supply capability.

Rate of fire of weapons systems.

Lethality of Munitions.

Design characteristics.

Explosive energy.

Accuracy of Fires.

Weapon and munition design characteristics.

Crew proficiency.

Terrain and weather effects.

Visibility.

Target Acquisition.

Intelligence and intelligence analysis.

Location and functioning of observers and sensors.

Transmission of target data.

Ability to operate in limited visibility.

Flexibility of Employment.

Weapons ranges.

Mobility.

Signature effects.

Fire control systems.

Tactical employment doctrine.

MANEUVER

Unit Mobility.

Physical fitness and health of individuals.

Unit teamwork and esprit.

- Unit equipment capabilities.
- Unit equipment maintenance.
- Unit mobility skills.
- Level of training proficiency.

Tactical Analysis.

- Intelligence and knowledge of enemy disposition, composition, tactics, recent significant activities, and possible enemy courses of action.
- Understanding terrain and weather effects.
- Understanding of own unit capabilities.
- Understanding of own unit mission.
- Understanding of restrictions and limitations placed upon unit operations.
- Ability to operate in limited visibility conditions.

Management of Resources.

- Equipment utilization.
- Supplies utilization.
- Personnel utilization.
- Time utilization.
- Utilization of subordinates' energies.

Command, Control, and Communications.

- Span of control.
- SOPs and doctrine.
- Staff efficiency.
- Communications efficiency.

PROTECTION

Concealment.

- Camouflage.
- Stealth.
- Equipment design.

Counter-enemy intelligence acquisition means.
Secure communications/COMSEC.
Fortifications/barriers/access limitation as effected by terrain and weather.
Deception operations.
OPSEC.

Exposure Limitation.

Minimize potential target size.
Minimize potential target exposure time.
Complicate potential target tracking.
Ability to operate during limited visibility, in adverse weather, on rough terrain.

Damage Limitation.

Individual protective equipment design and use.
Use of natural cover.
Use of artificial cover, including field fortifications.
Effect of terrain and weather.
Combat vehicle design.
Medical treatment and evacuation system.
Combat equipment repair (maintenance & recovery) and cannibalization.
Alternate C2 arrangements.
Providing personnel replacements.
Providing material replacements.
Miscellaneous efforts to maintain continued unit combat effectiveness.

LEADERSHIP

Technical Proficiency.

Training (unit training, and EM, NCO, & officer development courses).
Experience.

Understanding Unit Capabilities.

- Training.

- Experience.

- Selection.

Communication Skills

- Selection.

- Training.

- Personality. (There is not one way to be effective).

Dedication, Commitment, and Morale.

- Motivation.

- Selection.

- Training.

- Recent success or failure (in combat).

Understanding Battlefield Effects.

- Combat experience.

- Training.

- Luck.

Sustaining Effectiveness.

- Organizational skills.

- Analytical skills.

- Technical & tactical skills.

- Knowledge of doctrine and the ability to recognize where there are gaps.

- Command and control procedures.

- Troop Leading Procedures.

- Adherence to good SOPs.

- Inspections.

- Rehearsals.

- Training.

Native Intellect.

BG(R) Wass de Czege produced a model to analyze relative combat power that required an analysis of the effects of leadership, firepower, maneuver, and protection. The model also accounted for the enemy's ability to degrade the friendly force's efforts. The model is written as if it were a mathematical equation, but requires a subjective analysis of relative combat power.

Figure 5: Wass de Czege's RELATIVE COMBAT POWER MODEL ²⁴

$$L_f(F_f + M_f + P_f - D_e) - L_e(F_e + M_e + P_e - D_f) = \text{The Outcome of Battle}$$

L_f - friendly leadership effect

F_f - friendly firepower effect

M_f - friendly maneuver effect

P_f - friendly protection effect

D_e - enemy degrading of
firepower, maneuver,
& protection effects.

L_e - enemy leadership effect

F_e - enemy firepower effect

M_e - enemy maneuver effect

P_e - enemy protection effect

D_f - friendly degrading of
firepower, maneuver,
& protection effects.

"In simplest and unembellished terms the equation states that the outcome of battle depends upon the difference in combat power of the antagonists. It further states that combat power is the result of what leaders do with the firepower, maneuver, and protection capabilities of their units. It also states that combat power is affected by the efforts on the part of the antagonists to degrade the combat capabilities of the other while attempting to minimize the effects of such action on their own combat capabilities." ²⁵

The model proves to be useful. It accounts for all elements of combat power and the possible effects. It incorporates the attempts of either side to degrade their

adversary's combat power. It illustrates that leadership is the dynamic ingredient that determines if the elements of combat power are to be effectively employed. The Wass de Czege model presents further detail by giving examples of how leaders can amplify their own combat power while degrading the enemy's. This model is excellent at explaining the elements of combat power and how they function. However, a shortcoming is that the formula is so expansive that it inhibits the planner's ability to conduct a relative combat power analysis quickly. A simpler process that highlights the differences in combat power should prove useful. This can be accomplished with a matrix. A matrix that functions as an analytical tool can help planners to quickly focus on the pertinent aspects of relative combat power.

V. THE RELATIVE COMBAT POWER MATRIX

The relative combat power matrix uses the dynamics of combat power (maneuver, firepower, protection, leadership) to evaluate both friendly and enemy forces. Strengths and weaknesses are determined for each force. Determining strengths and weaknesses enables planners to make decisions on what significant factors will impact on the battle. Identification of the significant factors let planners select tactics, techniques, and procedures for developing courses of action that are suitable, acceptable, and feasible.

Recall where the relative combat power analysis occurs. The military decision making process has already had the planner consider the mission. In step one, assumptions that impact on the upcoming mission are stated. The planner reviews the mission and concept of the higher headquarters one and two levels up (eg. Brigade would review division and corps missions & concepts). Specified and implied tasks are listed, then mission essential tasks are identified. The planner is aware of the restrictions and

Figure 6: RELATIVE COMBAT POWER MATRIX

ELEMENT OF COMBAT POWER	FRIENDLY FORCES	ENEMY FORCES	DEDUCTION
MANEUVER	(+)	(+)	
	(-)	(-)	
FIREPOWER	(+)	(+)	
	(-)	(-)	
PROTECTION	(+)	(+)	
	(-)	(-)	
LEADERSHIP	(+)	(+)	
	(-)	(-)	

Significant Factors:

- (1)
- (2)
- (3)
- (4)

limitations of his unit. A time analysis is conducted to ensure the planner accounts for time and space factors for both friendly and enemy forces. The restated mission is then developed and becomes the Mission Statement.

Step two analyzes the Situation and the Courses of Action. This includes considerations affecting the courses of action. Characteristics such as weather, terrain (obstacles, avenues of approach, key terrain, observation and fields of fire, cover and concealment), and other pertinent factors (political, economic, sociological, ethnic, etc) are analyzed. The enemy's disposition, composition, size, strength, special considerations, recent significant activities, and peculiarities and weaknesses are carefully considered. Then, the planner's own unit is analyzed much the same way that he analyzed the enemy units. Additionally, the planner considers his generic task organization, command and support relationships, and other aspects that impact on the status of his units. If a planner were just to blindly crunch numbers to arrive at some force-ratio, he ignores much of the information that may impact on course of action development that the analysis provides him.

It is at this point that relative combat power is analyzed. Already, much analysis has occurred. One thing to note: at this point enemy courses of action have not been analyzed. It makes sense that the enemy would only prepare his courses of action after considering the combat power of each force. It is prudent for a planner to do the same. This allows him to refrain from anticipating unrealistic enemy courses of action. Once the possible enemy courses of action are realized, then courses of action are developed for friendly forces. Often, the best course of action is not the one that best defeats the enemy's most likely course of action, or most dangerous course of action. The best course of action is probably one that can defeat most of the possible enemy courses of action--to include the most likely and most dangerous. Having a solid grasp of relative combat power ensures that the planner's courses of action remain in the realm of the possible.

{Note: the following chart is an extract of the Commander's or Operations Estimate from the Final Draft of FM 101-5: Command and Control for Commanders and Staff, dated August 1993. The same procedure is found in many doctrinal manuals. The author included this chart to illustrate where the Relative Combat Power Analysis occurs during the estimate process}

Figure 7: COMMANDER'S or OPERATIONS ESTIMATE

1. Mission
2. Situation and Course of Action
 - a. Considerations affecting the possible courses of action.
 - (1) Characteristics of the area of operations
 - (a) Weather
 - (b) Terrain
 - (c) Other pertinent factors
 - (2) Enemy situation
 - (a) Disposition
 - (b) Composition
 - (c) Strength
 - (d) Other considerations
 - (e) Recent and present significant activities
 - (f) Peculiarities and weaknesses
 - (3) Own situation
 - (4) *RELATIVE COMBAT POWER*
 - b. Enemy capabilities. (This is where enemy courses are considered)
 - c. Own courses of action.
3. Analysis of Courses of Action
4. Comparison of Courses of Action
5. Decision/Recommendation

At this point, refer again to the relative combat power matrix. Keeping in mind that the analysis has been an ongoing process that has provided the planner with substantial information, the planner considers relative combat power.

1: Strengths and Weaknesses. Remember the factors of Mission, Enemy, Terrain, Troops Available, and Time, (METT-T). Begin the analysis using the four dynamics of combat power listing the strengths and weaknesses for both friendly and enemy forces. Include as many strengths and weaknesses that have relevance and could impact on course of action development.

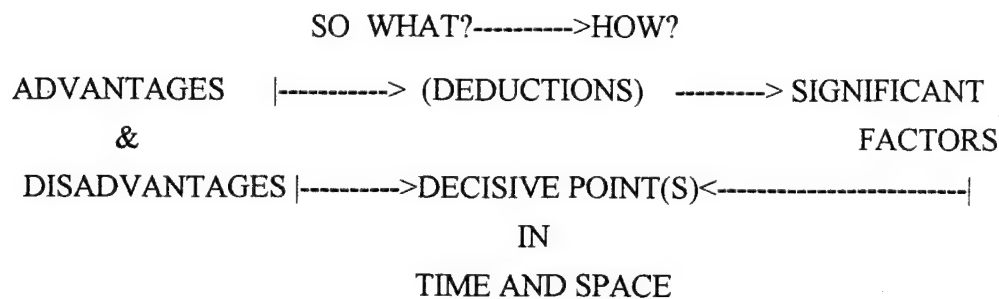
RELATIVE COMBAT POWER MATRIX

ELEMENT OF		
COMBAT POWER	FRIENDLY FORCES	ENEMY FORCES
MANEUVER	(+) Greatest capability	(+) Enemy's strength
	(+) Next greatest capability	(+) Next greatest strength
	(-) Greatest liability	(-) Enemy's weakness
	(-) Next greatest liability	(-) Enemy's next weakness
FIREPOWER	(+) Greatest effect of weapons	(+) Enemy's strength
	{The pattern continues for each element of combat power.}	

2: Make Deductions. Compare the strength and weaknesses and ask some questions about the significant factors. The first question is "So What?". These are strengths and weaknesses, so what does that mean to my unit? What actions should my unit take to gain an advantage? The planner should also ask himself, "How?" How can my unit make the strengths work in our favor while minimizing the unit's weaknesses? This is called the "So What?/How?" drill. Compare friendly ability to maneuver not only against the enemy's ability to maneuver, but also against how the enemy's firepower,

protection and leadership will affect friendly forces' maneuver. Consider how each element of combat power may be affected by all of the others for both friendly and enemy forces. Now, one can make some deductions. Planners do not undertake this effort to discover that surprise is key or mass is important. The principles of war are known before a relative combat power analysis begins. The planner is after aspects that factor into this particular situation. A diagram of the So What? / How? drill follows:

Figure 8: SO WHAT? / HOW? DRILL



3: Significant Factors: Many aspects of a situation are broad and general. They will apply to many similar situations. These do not help a planner gain any real insight, however, several factors will have a direct impact on the ability of the unit to accomplish its mission. These may allow a unit to exploit an enemy weakness. The factors may allow a unit to capitalize on its strengths. Because of the nature of these factors, the planner extracts them. These factors become the *significant factors*. The *significant factors* must apply to every course of action that is developed. By carefully considering the *significant factors* for a particular situation, the planner can determine the decisive point. The drill allows a planner to consider techniques that may included in a course of action. There is always more than one way to accomplish the mission. All courses of action must take into consideration the significant factors that the planner identifies, or the course of action is probably not feasible. A simple example of the So What? / How? process follows.

EXAMPLE

DEDUCTION

The enemy desires to operate as a combined arms team with infantry, armor, and artillery operating together.

SO WHAT?

Separate his infantry from his tanks and cause him to fight separately.

HOW?

Cause his infantry to dismount to clear obstacles/minefield.

Use ATGM fires in a planned engagement area against tanks.

Dedicate counterbattery units.

Use artillery to separate and confuse his units.

Use a combination of the above.

Use multiple ambushes.

[Planners consider these as possible techniques that may contribute to the overall success of the course of action.]

4: The Decisive Point. As stated earlier, Clausewitz, Jomini, Sun Tzu each believed that a planner had to determine how and where to mass combat power in order to properly plan the operation. Planners need to identify a decisive point or points. This concept remains a part of our doctrine.

"...[T]he CO identifies potentially decisive points where he can generate superior combat power in relation to the enemy. These points may result from his terrain analysis (locations on the ground which provide an advantage or put the enemy at a disadvantage), from the enemy analysis (an identified enemy weakness that can be exploited), or possibly from the time analysis (a time when the combat potential of the enemy force is degraded). Ideally, a decisive point will be identified where an enemy weakness is positioned at a time and a location that allows the [unit] to generate overwhelming combat power. These points are potentially decisive because

the effects of the [unit's] combat potential, when applied there, should lead to accomplishing the mission." 26

The centerpiece of course of action development is the determination of the decisive point(s) in time and space. As the above quotation indicates, decisive points may be the ground, enemy weaknesses, or a particular moment in time. Perhaps a combination of factors combine to cause something to be decisive. The decisive point is where the unit will plan to accomplish its mission. This is where the unit will ultimately win. The planner should review the significant factors to deduce possible decisive points, then planners build courses of action around the decisive point(s). At this point the planner selects the best tactics, techniques, and procedures to employ combat power at the decisive point(s) for each course of action.

Until the planner determines the significant factors, it is difficult to determine the decisive point. Sometimes, after a senior officer acquires a requisite amount of experience, he may feel like he knows what to do. He may credit his gut instinct. Most likely without being fully aware of it, he has mentally accomplished a relative combat power analysis. There is no substitute for experience. However, by training to fully consider the aspects of relative combat power, a less experienced officer may arrive at a creditable course of action.

The same significant factors can later be used as criteria to evaluate courses of action. Each course of action can be compared to the significant factors to find which course of action best accounts for them. The goal is to determine which course of action best accomplishes the mission. The significant factors may be augmented with other criteria such as the Principles of War, commander's guidance and intent, Characteristics of the Offense, Characteristics of the Defense, Tenets of Army Operations, and other criteria that have application to the mission and will assist in distinguishing between the courses of action.

Figure 9: COURSE OF ACTION COMPARISON MATRIX

<u>CRITERIA</u>	<u>COA 1</u>	<u>COA 2</u>	<u>COA 3</u>
SIGNIFICANT			
FACTORS			
PRINCIPLES			
OF WAR			
COMMANDER'S			
GUIDANCE &			
INTENT			
CHARACTERISTICS			
OF THE			
OFFENSE			
CHARACTERISTICS			
OF THE			
DEFENSE			
TENETS OF			
ARMY			
OPERATIONS			

Review: By properly conducting the military decision making process, the planner has begun the analysis of relative combat power, which will provide him with the proper background to proceed. Next, by using the elements of combat power as the criteria for analysis, the planner can determine strengths and weaknesses for both friendly and enemy units. Then by asking "So What?/How?" for each of the strengths and weaknesses, the planner will be able to make some pertinent deductions as to what may affect the outcome of the battle. Some aspects of these deductions will have a significant impact upon how to proceed with course of action development. They are identified as significant factors. A close contemplation of how these significant factors may impact

on the outcome of the battle enables the planner to determine potential decisive points on the battlefield. Courses of action build around the successful employment of combat power at the decisive points use tactics, techniques, and procedures that will win on the battlefield. Courses of action are successful because planners determine how to mass the effect of combat power at the decisive points. The analysis of combat power complements the planner's efforts throughout the Military Decision Making Process to ensure that he produces viable courses of action. Admittedly, until a planner attempts to use the Relative Combat Power Matrix, it may seem confusing. A hypothetical situation assists in demonstrating how a planner may use the relative combat power matrix.

VI. HYPOTHETICAL SITUATION TO ILLUSTRATE THE RELATIVE COMBAT POWER MATRIX.

The following hypothetical example illustrates how the relative combat power matrix assists the planner in determining the important aspects of combat power. To set the scenario, background is offered on the enemy and friendly units and the terrain.

Mission: The brigade is to defend in sector and defeat an enemy Motorized Rifle Division (MRD) forward in the brigade sector causing the enemy to commit his corps main attack to the south against a reinforced brigade, the division's main effort. The enemy is expected to attack in the next 36 to 48 hours.

Enemy: The enemy for this situation is a MRD. It is at approximately 85% strength overall. Division reconnaissance elements are presently in sector. It is equipped with two BTR-80 regiments (81MRR and 82MRR) that are at 80% strength, one BMP-2 regiment (93MRR) at 90% strength, and one T-80 tank regiment (65TR) at 90% strength. The division has three 2S3 howitzer battalions with 18 guns each, and one BM21 Motorized Rocket Launcher (MRL) battalion. For air defense the enemy has a Surface to Air (SAM) Regiment with twenty SA-8s. Each division may be supported by a squadron

of lift helicopters. It is believed that the enemy will commit some SU-25 FROGFOOT aircraft in our sector. The enemy has habitually led with the BTR-80 regiments to make contact and develop the situation. Then the enemy commits the BMP-2 and tank regiments to complete the destruction or to penetrate and pursue friendly LOCs.

Friendly: The brigade has one battalion conducting a screen for the division along the FEBA. As soon as the brigade moves into sector, that battalion reverts to brigade control. The brigade has about a twenty kilometer move into sector. Obviously, counterreconnaissance is initially a very important effort. The brigade consists of one Light Infantry Battalion (4-41 IN (L), one Mech Infantry Battalion (1-13 M), two Tank Battalions (2-32 AR and 3-32 AR), a direct support 155 SP Field Artillery Battalion (1-55 Arty), an Engineer Battalion, one Forward Support Battalion (FSB), an Air Defense Artillery (ADA) Battery, and other support units from platoon through company size. An attack (AH64) aviation squadron (1-64) is OPCON to the brigade for this mission. A hasty Force-Ratio comparison follows:

Figure 10: FORCE RATIOS FOR THEORETICAL EXERCISE

<u>UNIT</u>	<u>UE VALUE</u>	<u>STRENGTH</u>	<u>TOTAL</u>
Friendly Forces:			
4-41 IN (L)	.46	.95	.44
1-13 (M)	1.00	.96	.96
2-32 AR	1.19	.96	1.14
3-32 AR	1.19	.96	1.14
1-55 Arty	.75	.99	.74
1-64 Avn	1.30	.88	<u>1.14</u>
		Total	5.56

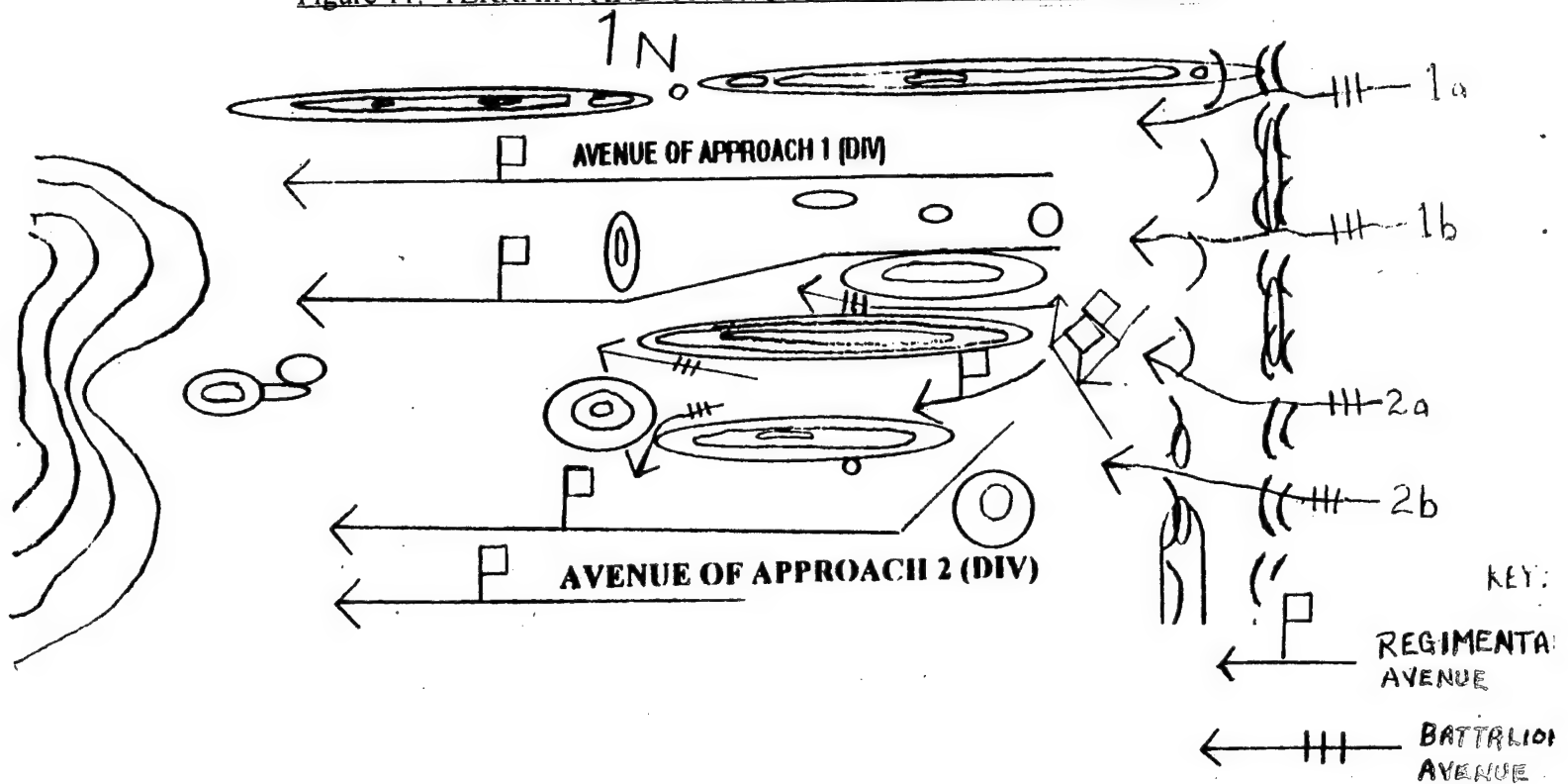
Enemy Forces

81 MRR	1.26	.80	1.01
82 MRR	1.26	.80	1.01
93 MRR	1.74	.90	1.57
65 TR	2.07	.90	1.86
Recon Bn	1.00	.90	.90
AT Bn	1.13	.90	1.02
204 Arty Regt			
2S3	1.18	.80	.94
2S3	1.18	.90	1.06
2S3	1.18	.95	1.12
204 MRL	2.32	.90	<u>2.09</u>
		Total	12.58

The ratio is 5.56 Friendly to 12.58 Enemy
1 : 2.26

Terrain: The brigade sector has four potential enemy corridors that enter it from the east. The corridors cut through a network of hills that mask the enemy's movement on the east side. In the center, the brigade area of operations is separated by a huge mountain ridge that effectively divides the sector in half. Either side of the center ridge provides the enemy with a division size avenue of approach. The author defines a division avenue of approach as one that will allow for two regiments to be in battle formation (two up one back) next to each other. The north side of the brigade area of operations is restricted by a ridge network that effectively walls in the brigade. Toward the rear, there are a couple of passes through the north ridge network that are platoon size corridors. The area south of the brigade's sector offers rolling terrain that eventually becomes very difficult for mechanized movement. In the west, the northern avenue of approach (AoA 1) eventually narrows to a regimental size corridor as it exits

Figure 11: TERRAIN AND AVENUES OF APPROACH DIAGRAM



the brigade area of operations. The south avenue of approach (AoA 2) passes through the brigade area in the southwest, and connects with another division avenue of approach further south.

The planner can now complete the Relative Combat Power Matrix. The first step is to consider the strengths and weaknesses. For each element of combat power, the planner considers the relative strengths and weaknesses for both friendly and enemy forces that pertain to this situation. The friendly element of combat power is not only compared against that specific element of the enemy, but also is compared and analyzed against all the enemy's elements of combat power. For example: The friendly element of maneuver is not only compared to the enemy ability to maneuver, but also to the enemy's ability to affect firepower, protection, and leadership. Using the matrix to consider the strengths and weaknesses reveals the advantages and disadvantages depicted in figure 12.

ELEMENT OF
COMBAT POWER

Figure 12: ADVANTAGES AND DISADVANTAGES

	FRIENDLY FORCES	ENEMY FORCES
MAN	<ul style="list-style-type: none"> +Flexibility to relocate combat units quickly. +Knowledge of Terrain effects. -Two major Ave of Approach gives enemy option to mass on either. -In places only light infantry can negotiate the terrain. -Time required to relocate units from one Avenue of Approach to another. 	<ul style="list-style-type: none"> +Experienced Combined Arms Team. +Speed and Tempo of Operations. -Must mass units to achieve combat power necessary for successful atk. -Terrain limits ability to effectively coordinate mutually supporting attacks on two major Avenues of Approach.
FP	<ul style="list-style-type: none"> +Target Acquisition Capability. +Set Engagement Areas. +Ability to laze targets for Copperhead, Atk Aviation, and CAS. -To support Covering Force/Security Operations some Arty will have to be far forward, then reposition. -Enemy acquisition limits number of engagements batteries can fire before moving. 	<ul style="list-style-type: none"> +Arty (Mass & Volume). +AT 8 mounted on BMPs (4000 m). -BTR Regts lack punch. -Must reposition artillery to support offensive operations.
PROT	<ul style="list-style-type: none"> +Fortified positions & obstacles. +Armament of M1 & M2. +ADA can be positioned on identifiable air corridors. -Exposure on routes in MBA. -Enemy recon already in AO. 	<ul style="list-style-type: none"> +T80 & BMP-2 armament. +Routes into AO masked by terrain (4 potential routes). -Poor armament on BTR-80 Regts. -Must expose units in order to advance through AO.
LDRSP	<ul style="list-style-type: none"> +Useful SOPs. +Supervision: Combat units, commo (retrans), can rehearse on site. -Lack of experience. 	<ul style="list-style-type: none"> +Combat experienced, professional, trained officer corps. +Doctrinally based operations. -lacks professional NCO Corps.

Now, deductions can be made. Knowing what strengths and weaknesses are provides the planner with important information. Next, the planner must figure out how the advantages and disadvantages affect his unit. Hence, the planner finds himself making deductions from the available information in order to grasp important aspects that pertain to course of action development. The planner can now employ the So What?/How? drill to make deductions. Some deductions from this example follow:

Figure 13: DEDUCTIONS

ELEMENT OF COMBAT POWER	DEDUCTION
<p><i>(Friendly & Enemy force information is same as above).</i></p> <p>MANEUVER</p>	<p>*Enemy can not achieve an overall 3:1 force ratio for an attack, so he must concentrate his effort north or south hoping to achieve local superiority.</p> <p>*Minimum Friendly combat power needed to defeat an MRD is three ground battalions with Atk Helo support.</p> <p>*Must determine where enemy Main Attack is and be able to reposition forces as necessary. Must identify Main Attack early.</p> <p>*Must have sufficient Counterrecon effort linked to a deliberate Occupation Plan that strips away the enemy recon to deny enemy information on disposition.</p> <p>*Limited ability for cross FLOT helo operations.</p>
FIRE POWER	<p>*Use Copperhead rounds during Counterrecon to inhibit enemy acquisition & enemy counterbattery.</p> <p>*Position enough artillery forward to support security force efforts, then quickly reposition to support Main Battle.</p> <p>*Mass effects of Artillery, Atk Aviation, Obstacles, CAS, and direct fire weapons to defeat enemy attack in engagement areas.</p>

PROTECTION	<ul style="list-style-type: none"> *Eliminate enemy recon *Create Engagement Areas. *Hasty defensive protective positions. *"Hide" reserve. *Multiple obstacles in multiple engagement areas.
LEADERSHIP	<ul style="list-style-type: none"> *Flexible Plan (Contingencies) *Rehearse *Identify Decision Points on when/where to shift units to meet threat.

There are more deductions that could be made, but a planner now has enough deductions clarified to ask himself, "What is significant about this particular mission?" Rather than focus on one particular element of combat power, significant factors that cut across the elements have application for developing courses of action. As the planner considers what he knows and what he does not know, several significant factors will become obvious.

The terrain in the Area of Operations can support a division attack in the north and in the south, but the enemy only has enough combat power to attack as a division through one of them. Basically, the enemy has four options. He can attack with four regiments in the north (Figure 14a). He can send three regiments north and one south (Figure 14b). He can attack with four regiments in the south (Figure 14c). He can send one regiment north and three south (Figure 14d). It is very unlikely that the enemy will attack with two regiments in the north and two in the south because he would not be able to generate enough combat power in either area. Thus, two mutually supporting attacks are not possible. However, the enemy may attempt to fix some friendly forces in one area and attack in the other. Most likely, the tank regiment will be assigned the Main Attack. It will probably attack as a second echelon regiment. This allows for other regiments to develop the situation, and begin the attrition of friendly forces. A key

Figure 14a: DIVISION ATTACKS: FOUR REGIMENTS IN THE NORTH

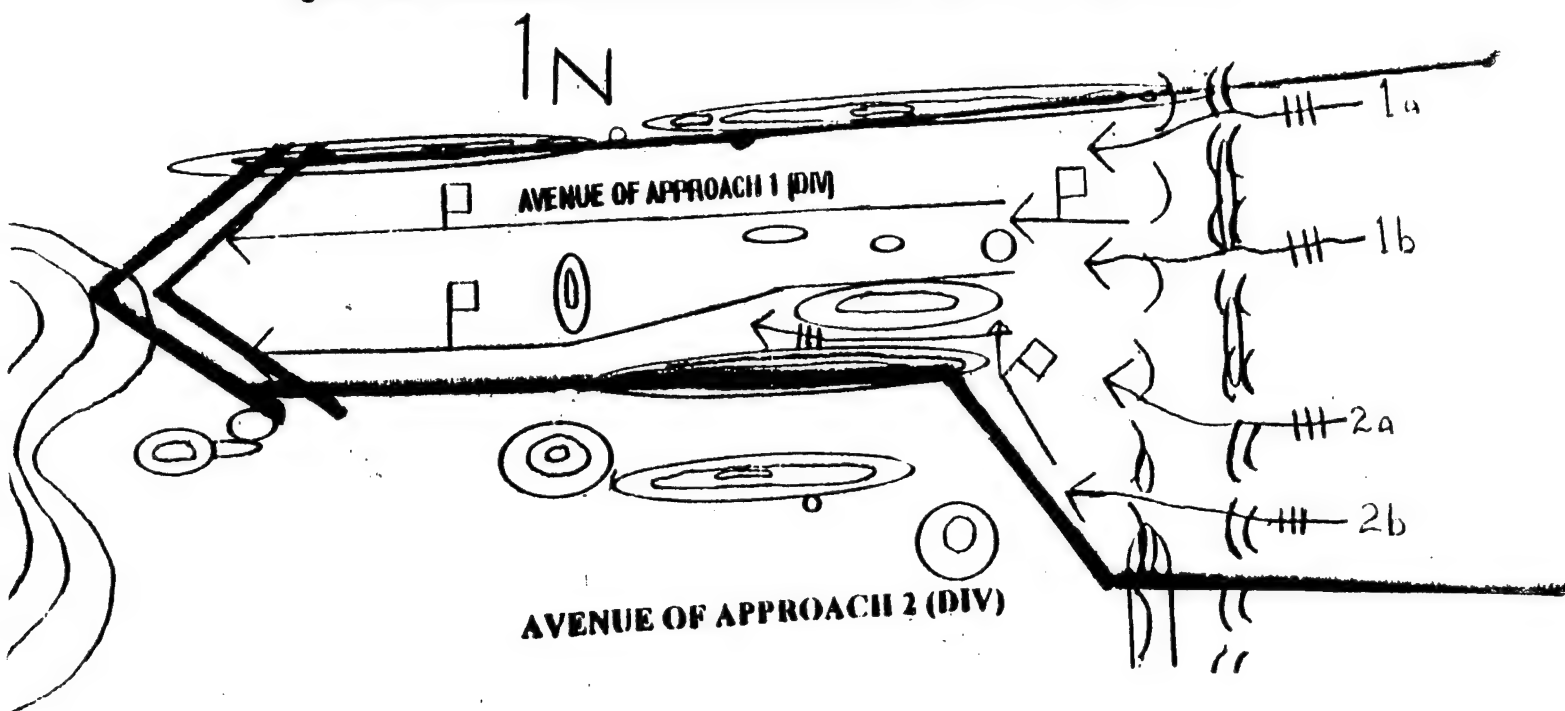


Figure 14b: DIVISION ATTACKS: THREE REGTS NORTH & ONE REGT SOUTH

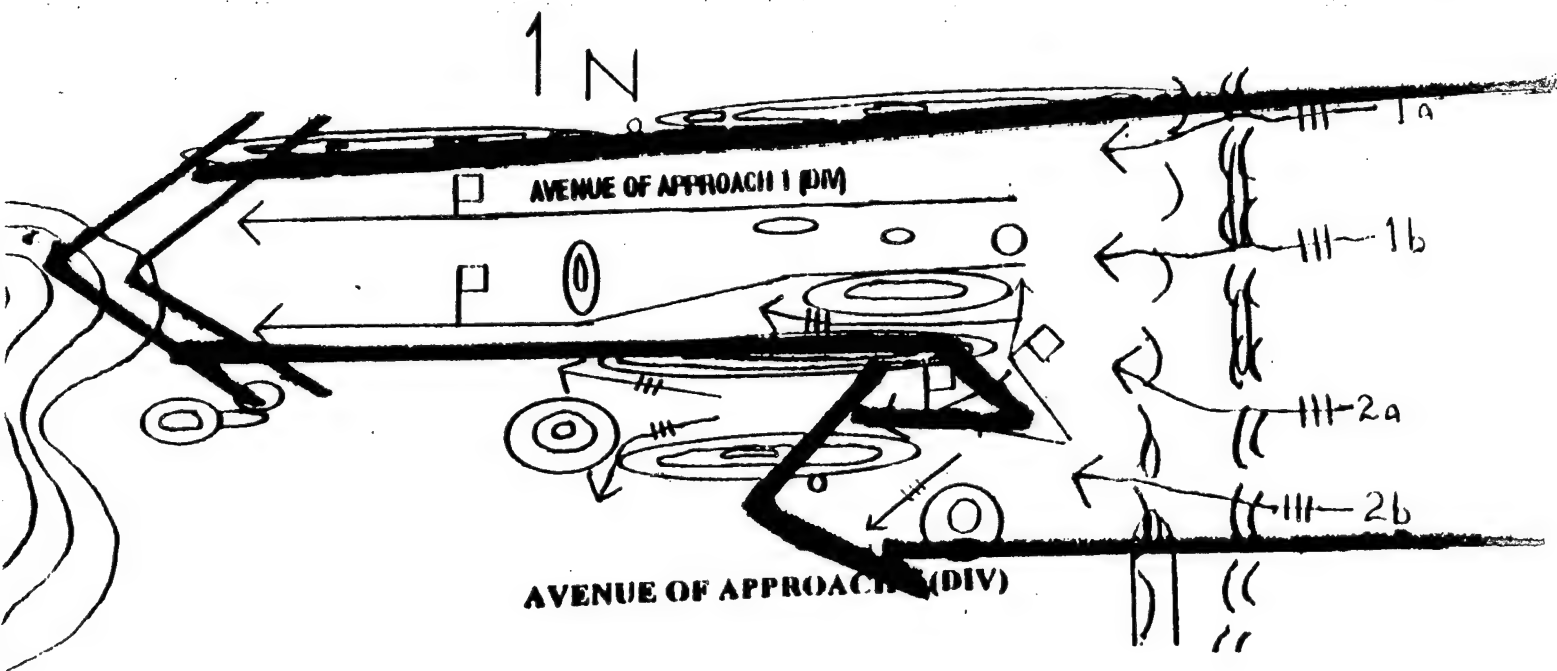


Figure 14c: DIVISION ATTACKS: FOUR REGIMENTS IN THE SOUTH

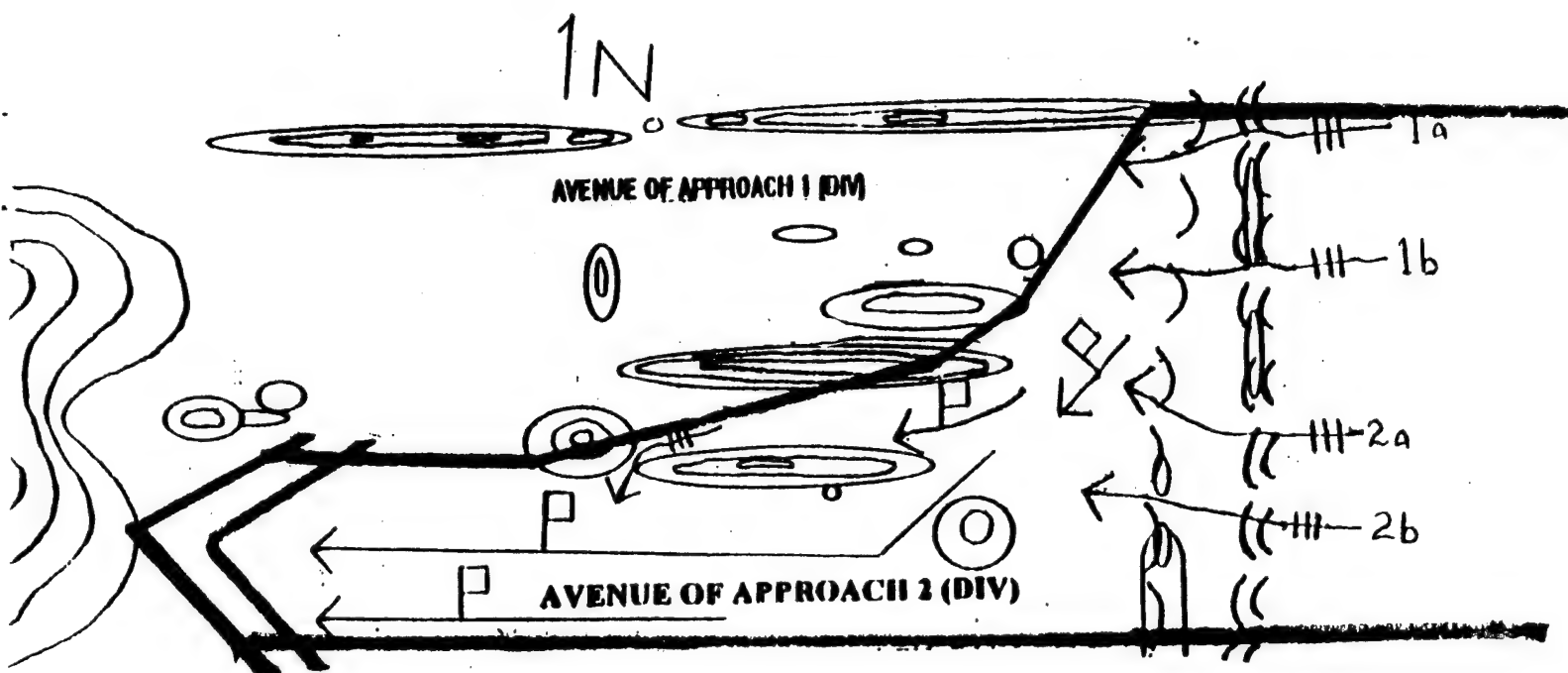
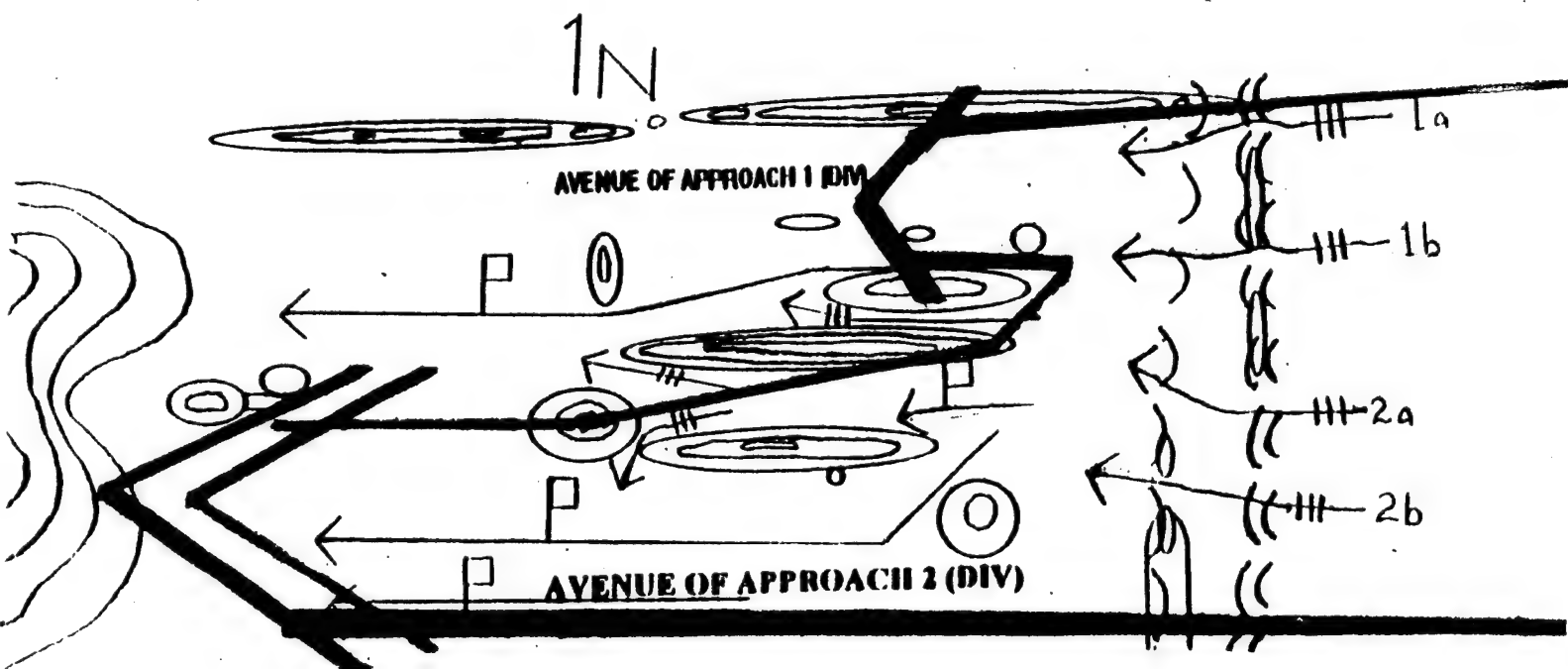


Figure 14d: DIVISION ATTACKS: ONE REGT NORTH & THREE REGTS SOUTH



decision point for friendly action is locating where the tank regiment is in enough time to ensure that enough friendly forces are positioned to defeat it. In order to defeat his main attack, friendly units must total about 3 battalions with additional assets. Consequently, any course of action that a planner develops must enable three battalions to combat the enemy MRD main attack regardless of where the main attack occurs. *Significant*

Factor 1: Must be able to mass three battalions against enemy's main attack.

In order to defeat the enemy, the combined effects of artillery, attack aviation helicopters, close air support, and direct fires must be brought to bear on the enemy as he passes through specific engagement areas. Obstacles, indirect and direct fires must combine in engagement areas to cause the enemy to slow down. Obstacles must break up the enemy's formations, disrupt his momentum, and allow for the enemy to receive the full effect of fires. Engagement areas must be set up in belts that confuse the enemy. The enemy should attack through one engagement area full of obstacles only to find themselves shortly thereafter entering another. Because the enemy has the AT8 that can out-range US weapons, but has no reliable infrared capability, the planner should use smoke to counter the enemy's range advantage. This can be done by employing artillery smoke in sheafs that prevents the enemy from acquiring friendly forces until they emerge from the sheaf of smoke. Smoke should be planned to confuse the enemy in the obstacles, and allow friendly tanks to engage enemy vehicles as they emerge silhouetted against a backdrop of smoke. After emerging from the smoke, the enemy will no longer have a range advantage. The enemy that has yet to clear the smoke will not know what is happening until it is too late. Smoke must be planned. All units must be aware of it and account for its effects. For example, attack helicopters and CAS are also affected by friendly smoke. While smoke can conceal friendly units from the enemy, it also can conceal the enemy from friendly units. Our use of smoke must not prevent attack helicopters and CAS from acquiring targets. *Significant Factor 2:* Engagement areas must be planned in depth to mass the effects of firepower and defeat the enemy's attack.

Related to Significant Factor 2 is the major effort required by engineers. A finite resource is time. Engineers can continue to work in the depth of the sector even after the fight begins in the security area. Friendly units that will engage the enemy in the engagement areas must fire from protected positions. The planner must know how many engagement areas are able to be constructed, where the engagement areas are, how many turret down/hull down positions are able to be dug to support the units firing into the engagement areas, what types of obstacles does the engagement area(s) require, and how many enemy vehicles are to be engaged in the engagement area at one time. Only after careful calculations can the planner be sure that the engagement area(s) will have the effects that he plans for.

There are other factors that require consideration. *Significant Factor 3:* The brigade must "win" the counterreconnaissance fight. If the brigade is not successful with the counterreconnaissance effort, the main battle becomes even more difficult. Effective counterreconnaissance can be accomplished with search and destroy counterrecon teams, and an aggressive occupation plan. In order to be successful, the counterrecon and occupation forces must be resourced from all the battlefield operating systems. Friendly planners must provide local ADA coverage, artillery for counterbattery and call for fire missions, logistics capabilities, and more. If the enemy's reconnaissance is allowed to roam free, he may guide the enemy's main body through gaps in the defense, call accurate fires on friendly positions, or conduct a spoiling attack. The enemy may try to use his reconnaissance teams to guide units through the ridge and hill complex in the center of the area of operations which allows him to bypass or outflank much of the friendly forces. Friendly planners can address this during reconnaissance by using the light infantry, augmented with tank/mech units and engineers, to destroy the enemy reconnaissance and deny these routes to enemy units.

The most important aspect that the planner must address is, "How do I come up with one course of action that can defeat an enemy Main Attack in the north that could

also defeat an enemy Main Attack in the south?" Ideally, one course of action will have decisive points that defeat the enemy in either area. This flexible course of action must be able to react to contingencies and give the relative combat power advantage to friendly forces.

A solid grasp of the effects of combat power and the focus forced by adhering to the significant factors as prescribed by the Relative Combat Power Matrix combine with the background obtained by following the military decision making process throughout the estimate assist in the search for decisive points. Time and distance factors combine with the enemy force's position on the ground during the attack to identify several potential decisive points. In order to defeat the enemy's main attack, the brigade must get at least three ground battalions of combat power in the fight. Since it is impossible to know ahead of time which avenue of approach the enemy will favor, there is no prudent way to preposition three battalions. Therefore, the plan will position two battalions in the north and two in the south. Depending on which direction the enemy commits his main attack, a battalion will have to reposition. If the enemy's main attack is in the south, one battalion will have to reposition out of the north. If the enemy's main attack is in the north, one battalion will have to reposition out of the south. Getting intelligence on which direction the enemy's main attack commits is very important. The brigade must get that information early to give the battalion enough time to reposition.

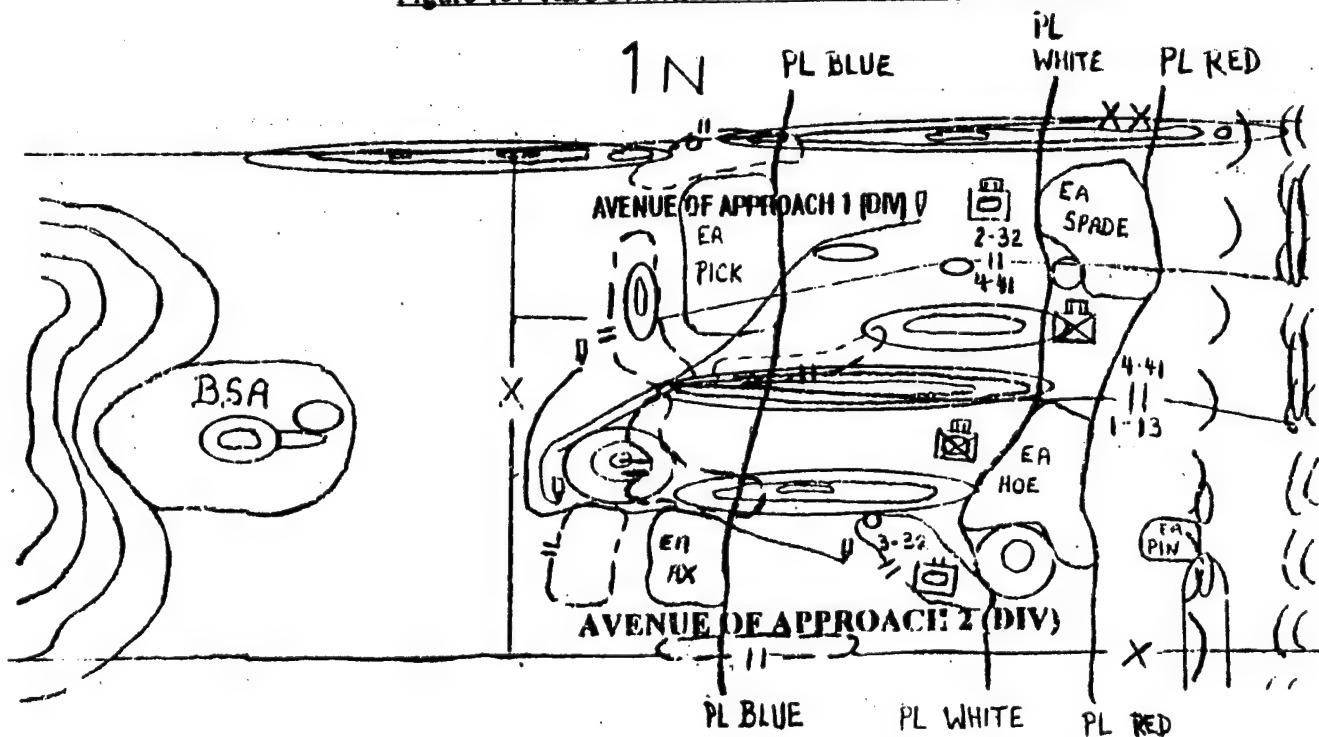
To ensure the battalion that repositions has the desired effect, the two friendly battalions that initially fight the enemy's main attack must destroy the first echelon battalions and force the commitment of the second echelon battalion(s) to pass the second echelon regiment(s) forward. This must be accomplished in the eastern part of the brigade sector. This is the *first decisive point*.

The second decisive point is the destruction of the second echelon regiments by a combination of three friendly battalions. This must be accomplished in the depth of the sector. Not only will one battalion have to reposition to join the fight, but the two

battalions that have been in contact will have to reposition as well. The aviation and artillery assets assist by pressing the attack while the ground maneuver units redeploy. Timing and mutual support become increasingly critical for success. When the enemy advances to the depth of the sector only to encounter a greater amount of combat power to contend with, he will be out of options. He can not turn back, and he will not have enough combat power to fight through. This becomes the *second decisive point*.

Engagement Areas target the decisive points. There are two decisive points in the north, and two in the south. The course of action positions two battalions in the south {TF 1-13 (Mech) & a tank battalion minus one company, 3-32 Armor} and two in the north {TF 4-41 (Light) & TF 2-32}. Acquisition assets are positioned to determine which avenue of approach the enemy tank regiment will pursue. If the enemy conducts his main attack in the north, the tank battalion (3-32 Armor) in the south repositions.

Figure 15: RECOMMENDED COURSE OF ACTION



The tank battalion will assist TF 2-32 and TF 4-41 in completing the destruction of the enemy in the north's second major engagement area (EA Pick). If the enemy conducts his

main attack in the south, the tank task force (TF 2-32) in the north gives OPCON of one of his companies to the light task force (TF 4-41) and repositions to the south. The tank task force will assist TF 1-13 and 3-32 Armor in the destruction of the enemy in the south's second major engagement area (EA Ax). Aviation assets target the second echelon battalions of each regiment. Priority of artillery is to the engagement area that targets the enemy's main attack.

The basics of this plan were employed during a recent brigade Tactical Commander's Development Course (TCDC). School of Advanced Military Studies (SAMS) students comprised the brigade staff and battalion commanders. NTC veterans will appreciate the impact of terrain. The brigade area of operations included the NTC's Central Corridor, Tiefort Mountains, the Whale Gap, and the outlying terrain in the area. The friendly and enemy units were as described in this text. Two battles were fought. Friendly forces won both.

The first battle had the enemy fix in the north with one regiment and follow that attack with two regiments attempting to cross to the south. One regiment began its attack in the south in an attempt to unite three regiments of combat power in the south. The decision to reposition the tank task force (TF 2-32) from the north was made early. Attack aviation proved very useful in attriting the enemy's combat power, and in obtaining intelligence on unit movements. Friendly forces defeated three and one half regiments while retaining almost 90 percent of their combat power.

The second attack had the enemy attempt to push all four regiments through the avenue of approach in the north. Once again, the decision to reposition units was made early. This time during the middle of the fight, the division commander reclaimed the battalion of helicopters. The brigade was still able to win the fight retaining 62 percent of its combat power while reducing the enemy to zero combat vehicles.

The relative combat power matrix method dramatically illustrated the reasons for the approach that friendly units undertook. The analysis of each element of combat

power revealed aspects of maneuver, firepower, protection, and leadership that had impact on how the battle was fought. *Maneuver:* The time and distance factors obtained from painstakingly analyzing maneuverability factors proved worthwhile. *Firepower:* The careful calculation of the amount of firepower required to achieve the desired effects in the engagement areas were validated. *Protection:* The protection effort for the vehicles firing into the engagement areas and the obstacles in the engagement areas allowed the engagement areas to have the desired effect, but also greatly assisted in allowing units to disengage and relocate to subsequent positions. *Leadership:* The leadership advantage was obtained by having a flexible plan that was equally effective in defeating the enemy regardless of how they might attack. *Deductions & Significant Factors:* The deductions and significant factors enabled friendly units to retain an awareness and focus on what possibilities remained for friendly and enemy actions. *Decisive Points:* The selection of decisive points upon which to build courses of action not only helped synchronize the effort, but also gave friendly units a point of departure to work from to coordinate additional actions.

One of the by-products of using this method is that the battalion commanders and the entire brigade staff were very aware of the reasons for employing combat power in the manner called for in the plan. All were very dedicated to successfully fighting the plan. This hypothetical example is not an attempt to speak to the virtues of this particular course of action or highlight its success. This is an attempt to let the reader know that the Relative Combat Power Matrix was helpful to a staff that had little time to prepare a course of action for a challenging circumstance. The matrix caused the commander and staff to talk through maneuver, firepower, protection, and leadership issues. A thorough relative combat power analysis was accomplished. The commander and staff made deductions, decided what was significant, determined decisive points, and created a course of action that addressed all concerns. In short, a relative combat power analysis, assisted by the matrix, resulted in a course of action that was quickly turned into

a plan and executed successfully in battle. The steps are not new. They were made simple and accomplished more quickly due to the Relative Combat Power Matrix.

VII. CONCLUSION

The author was struck by the fact that the Military Decision Making Process requires planners to conduct a relative combat power analysis without relating how that analysis should be accomplished. When doctrinal manuals have put forth the force-ratio technique for relative combat power analysis, it did not account for all the elements of combat power. While there is some merit for conducting a force-ratio analysis, this method is limited in what it reveals to a planner concerning combat power. About all that force-ratios establish is the relative values for the units on either side. It reveals little about how to employ the units. The monograph uses definitions for the elements of combat power to establish a foundation for what a relative combat power analysis should analyze.

The monograph referred to BG (R) Wass de Czege's effort to describe the effects of combat power and a method to account for the effects during relative combat power analysis. The monograph expanded on the possible effects for the elements of combat power. While BG(R) Wass de Czege's Relative Combat Model equation does a great job of accounting for the elements of combat power and their effects, it is not a user-friendly planning tool. This monograph introduced the Relative Combat Power Matrix as an "easier" technique.

The monograph illustrates a matrix that allows the planner to analyze relative combat power, account for the effects of combat power, and concentrate on particular friendly and enemy specifics relating to combat power. The Relative Combat Power Matrix accomplishes what the Military Decision Making Process should require be accomplished by analyzing combat power. For each element of combat power, it causes

the planner to be aware of the strengths and weakness for both friendly and enemy forces. It causes the planner to make some revealing deductions for the employment of his units. The Relative Combat Power Matrix highlights significant factors that allow the planner to derive decisive point(s) and employ practical tactics, techniques, and procedures for developing courses of action.

A hypothetical example was given to talk readers through the use of the Relative Combat Power Matrix. The example was a defensive scenario. It was conventional. To best illustrate the matrix, the author determined to take a traditional approach for the type of units, the mission, and the terrain. Could this matrix be of use in other situations? The answer is yes. For instance, consider the usefulness of the force-ratio method verses the Relative Combat Power Matrix for a light division that must conduct peacekeeping operations in an urban environment where there may be a small number of violent insurgents. Number crunching will not reveal anything, but a careful analysis of relative combat power may reveal some unusual and enlightened methods for the employment of troops. The Relative Combat Power Matrix can have application in any environment, on any terrain, against any potential foe. The prerequisite is for there to be at least two potential opponents that can make use of combat power. The author believes that the matrix is useful for tactical and operational decisions, but it does have limits.

The author does not believe that the standard elements of combat power adequately account for all the variables involved for strategic considerations. Decisions involving the strategic deployment--employment--and redeployment of army, naval, air, marine, special operations, allied, interagency, space assets, and other forces over the vast strategic continuum do not seem to be adequately captured by just the elements of combat power. The important thing is for planners to refuse to be put in a box. If the Relative Combat Power Matrix does not work, find a method that will. Planners must not be limited by only relying on the techniques that have worked for others.

After gaining an appreciation for the relevant factors of combat power, planners can then create courses of action that are suitable, feasible, and acceptable. For tactical and operational level military actions, the Relative Combat Power Matrix is a good method to highlight pertinent aspects of Combat Power relative to an enemy for a particular situation. It focuses the planner on the critical areas to analyze. It causes the planner to make deductions based on the available information. It gleans the significant factors from analysis rather than from "gut" instinct. It makes the planner focus on what may be decisive in the upcoming fight and allows him to build his course of action around his knowledge of the potential decisive points. The Relative Combat Power Matrix is a tool for today's planner.

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2. Jomini, The Art of War, from *Roots of Strategy Book 2*. Edited by Hittle, Brigadier General D. J.. Harrisburg, Stockpole Books, 1987, p. 461.

3. Sun Tzu, The Art of War, Griffith translation, London, Oxford University Press, 1965, p. 98.

4. FM 100-5: Operations, p. 2-9.

5. Clausewitz, p. 178.

6. Fm 100-5, p. 2-10.

7. Ibid, p. 2-10.

8. Ibid, p. 2-10.

9. Ibid, p. 2-10.

10. Ibid, p. 2-10 & 2-11.

11. Ibid, p. 2-11.

12. Ibid, p. 2-11.

13. Draft appendix (Relative Combat Power & Force Ratios), ST 101-5, Staff Organization, Ft Leavenworth, Command and General Staff College, p. 1-2.

14. ST 101-5, Staff Organization, p. I-7-3.

15. Draft appendix (Relative Combat Power & Force Ratios), ST 101-5, Staff Organization, p. 1-2.

16. Ibid, p. 1-3.

17. Ibid, p. 1-4.

18. Ibid, p. 1-5.

19. ST 101-5, Staff Organization, p. I-7-4.

20. Ibid, p. I-7-4.

21. Ibid, p. I-7-3.
22. Wass de Czege, "Understanding and Developing Combat Power." p. 1 & 2.
23. Ibid, p. 12 thru 14, and FM 101-5, Command and Control for Commanders and Staff (Final Draft, 1993) p. E-23 thru E-25.
24. Wass de Czege, "Understanding and Developing Combat Power." p. 10.
25. Ibid, p. 10.
26. FM 7-10, The Infantry Company, p. 2-19.

GLOSSARY

AAR	After Action Review
ADA	Air Defense Artillery
AO	Area of Operation
APC	Armored Personnel Carrier
AT	Anti-tank
ATACMS	Army Tactical Missile System
ATGM	Antitank Guided Missile
Atk	Attack
BCTP	Battle Command Training Program
CAS	Close Air Support
COA	Course of Action
COMSEC	Communications Security
CTC	Combat Training Center
C2	Command and Control
DS	Direct Support
EM	Enlisted Member
FEBA	Forward Edge of the Battle Area
FLOT	Forward Line Of Troops
GS	General Support
IFV	Infantry Fighting Vehicle
LOCs	Lines of Communication
MBA	Main Battle Area
MLRS	Multiple Launcher Rocket System
MRD	Motorized Rifle Division
MRL	Motorized Rocket Launcher

NCO	Noncommissioned Officer
NTC	National Training Center
OPCON	Operational Control
OPSEC	Operational Security
RCP	Relative Combat Power
SAM	Surface to Air Missile
SAMS	School of Advanced Military Studies
SOP	Standard Operating Procedure
SP	Self Propelled
TOE	Table of Organization and Equipment
TCDC	Tactical Commander's Development Course
TF	Task Force
UE	Unit Equivalents

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[NOTE: Conversation with rep from US Army Concepts Analysis Agency. Followed up with letter to COL Jim Helman, Special Assistant for Operational Campaign Analysis (SAOCA)]. No response as of 11 May 1995.